| | Search Terms |
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| 1 | BEST |
| 7 | BESTS |
| 8 | CALIBRATED |
| 4 | CALIBRATING |
| 2 | CALIBRATION |
| 9 | CALIBRATIONS |
| 7 | CORRECTED |
| 8 | CORRECTING |
| 6 | CORRECTINGS |
| 9 | CORRECTION |
| 1 | CORRECTIONS |
| 12 | EDGE |
| 13 | EDGES |
| 14 | EDGEWIDTH |
| 15 | EDGEWIDTHS |
| 16 | ERROR |
| 17 | ERRORS |
| 18 | EXPOSURE |
| 19 | EXPOSURES |
| 20 | FOCU |
| 21 | FOULS |
| 22 | ПТНОGRAPHIC |
| 23 | ПТНОGRAPHICS |
| 24 | UTHOGRAPHIES |
| 25 | <u> </u> |
| 56 | ПТНОGRAPHYS |
| 27 | WINTIGO |
| 28 | SMNWIAO |
| 29 | PHOTOLITHOGRAPHIC |
| 30 | PHOTOLITHOGRAPHICS |
| 31 | PHOTOLITHOGRAPHIES |
| 32 | РНОТОЦТНОВВАРНУ |
| 33 | РНОТОЦТНОGRAPHYS |
| 34 | RESIST |
| 35 | RESISTS |
| 36 | WAFER |
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| 38 | WIDTH |
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| | Total | USPAT | US-PGPUB | EPO | Odc | Derwent | IBM TDB | USOCR |
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| 2 | 153 | | | | | | | |
| 3 | 110252 | | | | | | | |
| 4 | 43934 | | | | | | | |
| 5 | 144317 | | | | | | | |
| 9 | 8187 | | | | | | | |
| 7 | 289539 | | • | | | | | |
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| 12 | 1783710 | | | | | | | |
| 13 | 986829 | | | | | | | |
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| 16 | 664064 | | | | | | | |
| 17 | 284255 | | | | | | | |
| 18 | 525850 | | | | | | | |
| 19 | 27701 | | | | | | | |
| 20 | 65 | | | | | | | |
| | 243173 | | | | | | | |
| 22 | 45193 | | | | | | | |
| 23 | 36 | | | | | | | |
| 24 | 225 | | | | | | | |
| 25 | 49116 | | | | | | | |
| 26 | 1 | | | | | | | |
| 22 | 555625 | | | | | | | |
| 28 | 479 | | | | | | | |
| 29 | 42108 | | | | | | | |
| 30 | 7 | | | | | | | |
| 31 | 16 | | | | | | | |
| 32 | 59910 | | | | | | | |
| 33 | 1 | | | | | | | |
| 34 | 296997 | | | | | | | |
| 35 | 72739 | | | | | | | |
| | 302921 | | | | | | | |
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| 38 | 1409611 | | | | | | | |

| | Search Terms |
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| 39 | WIDTHS |
| 40 | CALIBRATINGS |
| 41 | (((PHOTOLITHOGRAPHIC OR PHOTOLITHOGRAPHY OR LITHOGRAPHY OR LITHOGRAPHIC) AND (FOCUS SAME (EDGEWIDTH OR WIDTH OR EDGE)) AND FOCUS) AND ((FOCUS SAME (OPTIMUM OR BEST)) SAME (CALIBRATING OR CALIBRATED OR CORRECTING OR CORRECTED OR CALIBRATION OR CORRECTION OR ERROR)) AND RESIST AND EXPOSURE AND WAFER) |

| | Total | USPAT | US-PGPUB | Oda | Odf | Derwent | BOT MBI | USOCR |
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| 39 | 154100 | | 154100 | | | | | |
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| | ס | - | Document ID | Issue Date | Pages | Тійе | Current OR |
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| - | | | US 20030197130 A1 | 20031023 | 38 | Convergent charged particle beam apparatus and inspection method using same | 250/491.1 |
| 2 | ⊠ | | US 20030158710 A1 | 20030821 | 26 | Contact hole profile and line edge width metrology for critical image control and feedback of lithographic focus | 702/189 |
| m | | | US 20030142282 A1 | 20030731 | 15 | Pattern forming method | 355/55 |
| 4 | ⊠ | | US 20030139833 A1 | 20030724 | 17 | Methods and apparatus for determining optimum exposure threshold for a given photolithographic model | 700/97 |
| 5 | ⊠ | | US 20030121022 A1 | 20030626 | 27 | Method and its apparatus for manufacturing simiconductor device | 716/21 |
| 9 | \boxtimes | | US 20030103196 A1 | 20030605 | 29 | Exposure method and exposure apparatus | 355/55 |
| 7 | ⊠ | | US 20030095267 A1 | 20030522 | 38 | Focus masking structures, focus patterns and measurements thereof | 356/614 |
| ∞ | \boxtimes | | US 20030064298 A1 | 20030403 | 33 | Optical proximity correction method utilizing phase-edges as sub-resolution assist features | 430/5 |
| 6 | ⊠ | | US 20030048458 A1 | 20030313 | 32 | Method for determining lithographic focus and exposure | 356/601 |
| 91 | ⊠ | | US 20030036006 A1 | 20030220 | 10 | Methods for monitoring photoresists | 430/30 |
| 11 | ⊠ | | US 20030031943 A1 | 20030213 | 18 | Focus monitoring method, focus monitoring system, and device fabricating method | 430/30 |
| 12 | ⊠ | | US 20030015660 A1 | 20030123 | 74 | Method and system for monitoring a semiconductor device manufacturing process | 250/311 |
| 13 | ⊠ | | US 20020191165 A1 | 20021219 | 12 | Lithographic apparatus, device manufacturing method, and device manufactured thereby | 355/52 |
| 14 | ⊠ | | US 20020182521 A1 | 20021205 | 41 | Method of manufacturing semiconductor device | 430/22 |

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| | 250/310; 250/397; 250/398; 250/492.2 | | Tanaka, Maki et al. | × | | | | | | | US 20030197130 | |
| 2 | | | Bowley, Reginald R. JR. et al. | | | | | | | | US 20030158710 | |
| <u>е</u> | 355/52; 355/53; 355/77 | | Fujimoto, Masashi | | | | | | | | US 20030142282 | |
| 4 | 257/E21.525; 700/121; 716/19 | | Pierrat, Christophe et al. | | | | | | | | US 20030139833 | |
| 5 | | | Yoshitake, Yasuhiro et al. | | | | | | | | US 20030121022 | |
| 9 | 250/548; 355/53; 355/77; 356/399; 356/400 | | Hirukawa, Shigeru | | | | | | | | US 20030103196 | |
| 7 | | | Mieher, Walter Dean et al. | | | | | | | | US 20030095267 | |
| - ∞ | 430/296; 430/322; 716/19; 716/21 | | Broeke, Douglas Van Den et al. | | | | | | | | US 20030064298 | |
| 6 | | | Mieher, Walter et al. | | | | | | | | US 20030048458 | |
| 9 | | | Feke, Gilbert D. et al. | | | | | | | | US 20030036006 | |
| 11 | 355/18 | | Nakao, Shuji et al. | | | | | | | | US 20030031943 | |
| 12 | | | Shishido, Chie et al. | | | | | | | | US 20030015660 | |
| 13 | 355/53; 355/55; 355/67; 355/77; 356/399 | | Baselmans, Johannes J.M. et al. | | | | | | | | US 20020191165 | |
| 14 | 430/30; 430/330 | | Fujisawa, Tadahito et al. | | | | | | | | US 20020182521 | |

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| Current OR | 430/22 | 355/67 | 355/52 | 250/201.2 | 716/21 | 355/67 | 250/491.1 | 355/53 | 356/399 | |
| Title | Method of calibration of a lithographic apparatus, mask for use in calibration of lithographic apparatus, lithographic apparatus, device manufacturing method, device manufactured thereby | Lithographic apparatus, device manufacturing method, and device manufactured thereby | Specification determining method, projection optical system making method and adjusting method, exposure apparatus and making method thereof, and computer system | Method and system for improving focus accuracy in a lithography system | Illumination optimization for specific mask patterns | Detection apparatus and exposure apparatus using the same | Convergent charged particle beam apparatus and inspection method using same | Scan type projection exposure apparatus and device manufacturing method using the same | Aerial image measurement method and unit, optical properties measurement method and unit, adjustment method of projection optical system, exposure method and apparatus, making method of exposure apparatus, and device manufacturing method | |
| Pages | 12 | 14 | 49 | 14 | 27 | 37 | . 38 | 35 | 76 | |
| Issue Date | 20021121 | 20021114 | 20021031 | 20021031 | 20021017 | 20020725 | 20020509 | 20020425 | 20020411 | |
| Document ID | US 20020172876 A1 | US 20020167651 A1 | US 20020159040 A1 | US 20020158185 A1 | US 20020152452 A1 | US 20020097386 A1 | US 20020053643 A1 | US 20020048006 A1 | US 20020041377 A1 | |
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| 15 | 355/18; 430/30 | | Baselmans, Johannes Jacobus Matheus | | | | | | | | US 20020172876 | |
| 16 | 355/53; 356/399; 356/400 | | Boonman, Marcus Emile Joannes et al. | | | | | | | | US 20020167651 | |
| 17 | 355/53; 355/55; 355/67; 355/77; 356/399; 356/400; | | Hamatani, Masato et al. | | | | | | | | US 20020159040 | |
| 18 | | | Nelson, Michael L. et al. | | | | | | | | US 20020158185 | |
| 19 | 716/19; 716/20 | | Socha, Robert John | | | | | | | | US 20020152452 | |
| 20 | 355/53; 355/68; 356/399; 356/400 | | Mishima, Kazuhiko | | | | | | | | US 20020097386 | |
| 21 | 250/492.2 | | Tanaka, Maki et al. | | | | | | | | US 20020053643 | |
| 72 | 355/52; 355/55; 355/67; 355/77 | | Mishima, Kazuhiko | | | | | | | | US 20020048006 | |
| 23 | | | Hagiwara, Tsuneyuki et al. | | | | | | | | US 20020041377 | |
| 24 | 355/55; 355/67; 355/72; 355/75; 355/76; | | Nishi, Kenji | | | | | | | | US 20020036762 | |

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| John cyctem inte | using holographic reticles Optical critical dimension metrology system integrated into semiconductor wafer process tool Method of measuring aberration in an optical imaging system Projection exposure apparatus | ss tool n in an optical im osition adjustmen ng method | ses tool n in an optical im osition adjustmen ng method | using holographic reticles Optical critical dimension metrology system integinto semiconductor wafer process tool Method of measuring aberration in an optical imsystem System Projection exposure apparatus Exposure apparatus, surface position adjustment mask, and device manufacturing method Multiple exposure method Method and apparatus for determining optimum exposure threshold for a given photolithographic model | using holographic reticles Optical critical dimension metrology system integration semiconductor wafer process tool Method of measuring aberration in an optical imagnystem Method of measuring aberration in an optical imagnystem Projection exposure apparatus Exposure apparatus, surface position adjustment mask, and device manufacturing method Multiple exposure method Method and apparatus for determining optimum exposure threshold for a given photolithographic model SCAN TYPE PROJECTION EXPOSURE APPARATUS AND DEVICE MANUFACTURING METHOD USING SAME | using holographic reticles Optical critical dimension metrology system integrate into semiconductor wafer process tool Method of measuring aberration in an optical imaging system System Projection exposure apparatus Exposure apparatus, surface position adjustment uni mask, and device manufacturing method Multiple exposure method Multiple exposure method SCAN TYPE PROJECTION EXPOSURE APPARATUS AND DEVICE MANUFACTURING METHOD USING TH SAME Projection exposure apparatus, and device manufacturing method which compensate for a change in optical performance of a projection optical system | using holographic reticles Optical critical dimension metrology system integral into semiconductor wafer process tool Method of measuring aberration in an optical imagi system Projection exposure apparatus Exposure apparatus, surface position adjustment u mask, and device manufacturing method Multiple exposure method Method and apparatus for determining optimum exposure threshold for a given photolithographic model SCAN TYPE PROJECTION EXPOSURE APPARATUS AND DEVICE MANUFACTURING METHOD USING T SAME Projection exposure apparatus, and device manufacturing method which compensate for a change in optical performance of a projection optic system Method for generating a proximity model based on proximity rules | etrology system integrocess tool ation in an optical im etermining optimum etermining optimum ren photolithographic XPOSURE APPARATU ING METHOD USING Us, and device At compensate for a tice of a projection op ice of a projection op | using holographic reticles Optical critical dimension metrology system integration certical dimension metrology system integrated of measuring aberration in an optical imasystem Projection exposure apparatus Exposure apparatus, surface position adjustment mask, and device manufacturing method Multiple exposure apparatus, and device RODECTION EXPOSURE APPARATUS SCAN TYPE PROJECTION EXPOSURE APPARATUS AND DEVICE MANUFACTURING METHOD USING SAME Projection exposure apparatus, and device manufacturing method which compensate for a change in optical performance of a projection opt system Method for generating a proximity model based opproximity rules Projection exposure method and apparatus Accurate contact critical dimension measurement using variable threshold method |
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| US 20020018217 A1 | US 20020008869 A1 US 20020008863 A1 | US 20020008869 A1 US 20020008863 A1 US 20020003216 A1 | US 20020008869 A1 US 20020008863 A1 US 20020003216 A1 US 20010036604 A1 | US 20020008869 A1 US 20020008863 A1 US 20020003216 A1 US 20010036604 A1 | US 20020008869 A1 US 20020003216 A1 US 20010036604 A1 US 20010029403 A1 | 0008863 A 0003216 A 0036604 A 0029403 A 0012098 A | 0008863 A 0003216 A 0036604 A 0029403 A 0012098 4 | 0008863 A 0003216 A 0036604 A 0029403 A 0012098 A 1503 B1 1728 B1 | 0008863 A 0008863 A 0003216 A 0003216 A 00029403 A 0012098 A 503 B1 7728 B1 |
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| 25 | 430/30; 430/312 | | de Mol, Christianus Gerardus Maria et al. | | | | | | | | US 20020036758 | |
| 26 | | | Hansen, Matthew E. | | | | | | | | US 20020021460 | |
| 27 | | | Weber-Grabau, Michael et al. | | | | | | | | US 20020018217 | |
| 28 | | | Van der Laan, Hans et al. | | | | | | | | | |
| 29 | 355/30; 355/53; 355/67; 355/77 | | Taniguchi, Tetsuo et al. | | | | | | | | | |
| 30 | | | Kida, Yoshiki et al. | | | | | | | | | |
| 31 | 430/322; 430/396 | | Kawashima, Miyoko | | | | | | | | | |
| 32 | 700/29 | | Pierrat, Christophe et al. | | | | | | | | | |
| 33 | | | MISHIMA, KAZUHIKO | | | | | | | | | |
| 34 | 355/52; 355/53; 355/55; 430/30 | | Uzawa, Shigeyuki | | | | | | | | | |
| 35 | 438/14; 716/19; 716/20; 716/21; 716/5; 716/6 | | Liebmann, Lars W. et al. | | | | | | | | | |
| 36 | 355/75; 355/77 | | Nishi, Kenji | | | | | | | | | |
| 37 | 382/145; 702/150 | | Kim, Hung-Eil | | | | | | | | | |
| 38 | 355/55 | | de Mol, Christianus Gerardus Maria et al. | | | | | | | | | |

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| 39 | \boxtimes | | US 6559459 B2 | 20030506 | | *************************************** | 250/491.1 |
| 8 | Ø | | US RE38085 E | 20030422 | | Exposure method and projection exposure apparatus | 355/53 |
| 41 | Ø | | US RE38038 E | 20030318 | | Exposure method and projection exposure apparatus | 355/53 |
| 42 | ⊠ | | US 6519501 B2 | 20030211 | | Method of determining optimum exposure threshold for a given photolithographic model | 700/121 |
| 43 | ⊠ | | US RE37946 E | 20021231 | | Exposure method and projection exposure apparatus | 355/53 |
| 4 | Ø | | US 6493063 B1 | 20021210 | | Critical dimension control improvement method for step and scan photolithography | 355/53 |
| 45 | ⊠ | | US RE37913 E | 20021126 | | Exposure method and projection exposure apparatus | 355/53 |
| 46 | × | i | US 6486953 B1 | 20021126 | | Accurate real-time landing angle and telecentricity measurement in lithographic systems | 356/400 |
| 47 | ⊠ | | US 6440616 B1 | 20020827 | | Mask and method for focus monitoring | 430/5 |
| 84 | | | US 6425117 B1 | 20020723 | | System and method for performing optical proximity correction on the interface between optical proximity corrected cells | 716/21 |
| | \boxtimes | | US 6376139 B1 | 20020423 | | Control method for exposure apparatus and control method for semiconductor manufacturing apparatus | 430/30 |
| 20 | ⊠ | | US 6335784 B1 | 20020101 | | Scan type projection exposure apparatus and device manufacturing method using the same | 355/53 |
| 51 | ⊠ | | US 6335532 B1 | 20020101 | | Convergent charged particle beam apparatus and inspection method using same | 250/491.1 |
| 25 | ⊠ | | US 6327022 B1 | 20011204 | | Projection exposure method and apparatus | 355/53 |
| 53 | ☒ | | US 6317211 B1 | 20011113 | | Optical metrology tool and method of using same | 356/401 |
| 54 | ☒ | | US 6304317 B1 | 20011016 | | Projection apparatus and method | 355/55 |
| 55 | ☒ | | US RE37391 E | 20010925 | | Exposure method and projection exposure apparatus | 355/53 |
| 56 | ⊠ | | US 6258489 B1 | 20010710 | | Mask design utilizing dummy features | 430/5 |

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| 40 | 355/55 | | Nishi, Kenji | | | | | | | | | |
| 41 | 355/55 | | Nishi, Kenji | | | | | | | | | |
| 42 | | | Pierrat, Christophe et al. | | | | | | | | | |
| 43 | 355/55 | | Nishi, Kenji | | | | | | | | | |
| 4 | 355/77 | | Seltmann, Rolf et al. | | | | | | | | | |
| 45 | 355/55 | | Nishi, Kenji | | | | | | | | | |
| 46 | | | Gordon, Michael S. et al. | | | | | | | | | |
| 47 | 430/22 | | Izuha, Kyoko et al. | | | | | | | | | |
| 84 | 430/5; 716/19; 716/20 | | Pasch, Nicholas F. et al. | | | | | | | | | |
| 49 | 430/311 | | Fujisawa, Tadahito et al. | | | | | | | | | |
| 20 | 355/55; 430/30 | | Mishima, Kazuhiko | | | | | | | | | |
| 51 | 250/310; 250/397; 250/398; 250/492.2 | | Tanaka, Maki et al. | | | | | | | | | |
| 52 | 355/54; 355/75 | | Nishi, Kenji | | | | | | | | | |
| 53 | 356/400 | | Ausschnitt, Christopher P. et al. | | | | | | | | | |
| 54 | 355/53; 355/67; 355/71 | | Taniguchi, Tetsuo et al. | | | | | | | | | |
| 22 | 355/55 | | Nishi, Kenji | | | | | | | | | |
| 29 | | | Stanton, William et al. | | | | | | | | | |

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| 57 | ⊠ | | US 6221539 B1 | 20010424 | | Mask pattern correction method and a recording medium which records a mask pattern correction program | 430/5 |
| 28 | ⊠ | | US 6208469 B1 | 20010327 | | Method of adjusting reduction projection exposure device | 359/637 |
| 59 | ⊠ | | US 6191429 B1 | 20010220 | | Projection exposure apparatus and method with workpiece area detection | 250/548 |
| 09 | ☒ | | US 6178360 B1 | 20010123 | | Methods and apparatus for determining optimum exposure threshold for a given photolithographic model | 700/121 |
| | ☒ | | US 6130750 A | 20001010 | | Optical metrology tool and method of using same | 356/401 |
| 62 | ☒ | | US 6118516 A | 20000912 | | Projection exposure apparatus having a filter arranged in its projection optical system and method for protecting circuit pattems | 355/53 |
| | ☒ | | US 6090510 A | 20000718 | | Method for scanning exposure | 430/30 |
| 2 | ☒ | | US 6078380 A | 20000620 | | Projection exposure apparatus and method involving variation and correction of light intensity distributions, detection and control of imaging characteristics, and control of exposure | 355/52 |
| 65 | ⊠ | | US 6051349 A | 20000418 | | eveloping the | 430/30 |
| | ⊠ | | US 6040909 A | 20000321 | | Surface position detecting system and device manufacturing method using the same | 356/614 |
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